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GUIDE FOR
STORAGE OF POTATOES

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Indian Standard

GUIDE FOR STORAGE OF POTATOES

0. F O R E W O R D

0.1 This Indian Standard was adopted by the Indian Standards Institution on 31 September 1972, after the draft finalized by the Fruits and Vegetables Sectional Committee had been approved by the Agricultural and Food Products Division Council.

0.2 To ensure fuller utilization of perishable foodstuffs, such as fruits and vegetables, it is necessary that they should be preserved under such conditions as to maintain their fitness for human consumption over a period of time. Preservation by refrigeration is one of the very important means of preserving foodstuffs. To provide guidelines for the rapidly developing cold storage industry in the country for storing various fruits and vegetables on scientific lines, a series of Indian Standard guides based on corresponding ISO Recommendations are being issued. It is hoped that these guides stipulating the conditions to be maintained for different fruits and vegetables would prove helpful in stimulating more intensive research, better administration of cold storages and in preventing avoidable wastage of foodstuffs.

0.3 In the preparation of this guide, due consideration has been given to the provisions of the Cold Storage Order, 1965. However, the provisions specified in the guide are subject to restrictions imposed under this order.

0.4 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS : 2-1960*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

1. SCOPE

1.1 This standard describes methods for obtaining conditions for successful cold storage of potatoes pertaining to the species *Solanum tuberosum* Linnaeus intended for consumption, either directly or after industrial processing.

*Rules for rounding off numerical values (*revised*).

1.2 This standard does not apply to seed potatoes.

2. CONDITIONS OF HARVESTING AND PUTTING INTO STORAGE

2.1 Harvesting — The potato tubers should be harvested mature. The skin should be firm, should not peel off under mere rubbing and should be free from cracks.

2.2 Quality Characteristics for Storage — The lots to be stored should not contain greater proportions of tubers which are bruised, frozen, withered, rotten or punctured by insects or affected by fungal decay, or which have sprouted. This may possibly be achieved by preliminary sorting, which needs to be carried out with care since it frequently causes bruises which may be more detrimental to potatoes during storage than the presence of these defects. Defective tubers should not be stored.

2.3 Putting into Storage — The potatoes should be put into the store as soon as possible after harvesting, and the temperature around the tubers should be lowered as quickly as possible. Potatoes should be pre-cooled to remove field heat prior to storage.

2.4 Method of Storage — The potatoes may be stored in containers, boxes, stacking trays, bags, or in bulk. When they are stored in bulk or in bags and no means are provided to prevent the lower layers from being crushed by the upper layers, the height of the tuber layer should be specified according to the hardness of the variety; the quality of the lot and the conditions of the air-circulating device ; the maximum height recommended is 3·5 m. It is expedient to leave a distance of approximately 30 cm between the top of the cases or heap and the ceiling, to permit free circulation of the air.

Ware potatoes should be stored away from the light.

3. OPTIMUM CONDITIONS OF STORAGE

3.1 Temperature — The optimum temperature is between 1°C and 3°C. However, in the case of potatoes intended for certain industrial processing operations, such as 'crisps' type, it is recommended that the temperature be raised to between +7°C and +10°C, depending upon the variety.

3.2 Relative Humidity — The relative humidity for storage of potatoes should be between 85 and 95 percent:

3.3 Air Circulation — The containers and the way in which they are stacked should permit free circulation of air.

3.3.1 Mixing — Mixing of air in closed circuit renders temperature and relative humidity uniform. An air-circulation ratio of between 20 and 30 is recommended.

3.3.2 Air Change — Potatoes stored in densely packed form have the effect of producing an accumulation of carbon dioxide and of heat due to respiration. This should be removed by changing the atmosphere.

3.3.2.1 When artificial cooling is used, with closed-circuit mixing, the atmosphere should be changed at regular intervals throughout the storage period. A flow of 100 m^3 per cubic metre of product per hour is recommended.

3.4 Storage Life — The expected storage life is 8 months in refrigerated storage.

3.5 Operations at the End of the Storage Period — Progressive reheating to $+10^\circ\text{C}$ is necessary at the end of the storage period, before the sorting and packing operations are carried out. In the case of potatoes intended for certain industrial processing operations, for example, of the 'crisps' type, it is recommended that the temperature should be progressively raised to 14°C during the last weeks of storage.

4. ADJUNCTS AND OTHER PRESERVATION PROCESSES

4.1 In cases where the temperature is above $+7^\circ\text{C}$, suitable measures should be taken to prevent sprouting that may begin.

INDIAN STANDARDS

ON

FRUITS AND VEGETABLES

IS:

2773-1964	Cauliflower
2774-1964	Cabbage
2775-1964	Carrots
2776-1964	Brinjals (egg plant)
2777-1964	Peas-in-pods
2778-1964	Tomatoes
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2869-1964	Canned orange segments
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3246-1965	Canned okra (<i>BHINDI</i>)
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3500-1966	Mango chutney
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3718-1966	Limes, fresh
3728-1966	Wooden boxes for packaging apples
3801-1966	Guava
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3883-1966	Canned tomato puree
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4935-1968	Synthetic syrups
4936-1968	Fruit squashes
4939-1968	Methods of test for products derived from fruits and vegetables
5781-1970	Method for determination of total solids in fruits and vegetable products
5800-1970	Orange juice
5861-1970	Jams, jellies and marmalades
6028-1971	Guide for storage and transport of green bananas

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Alcoholic drinks	Food grain handling and storage
Animal feeds	Fruits and vegetables
Animal housing and equipment	Honey and by-products
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Bee-keeping equipment	Laboratory animals
Beverages	Meat and meat products
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Cocoa products	Pesticidal formulations
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Dairy equipment	Propagation materials
Dairy industry, layout plans	Regulated market yards
Dairy industry, methods of test	Sensory evaluation
Dairy laboratory apparatus	Spices and condiments
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